Amendments To The Abstract

An angle rotator ~~performs angle~~ uses a coarse stage rotation and a fine stage rotation to rotate ~~of~~ an input complex signal in the complex plane according to an angle θ. ~~The angle rotator includes a coarse stage rotation and a fine stage rotation. The two specific amounts of rotation are obtained directly from the original angle, without performing iterations as are performed by known CORDIC-type methods.~~ The coarse stage rotation includes a memory device storing pre-computed ~~is performed using truncated approximations for the~~ cosine θ_M and ~~the~~ sine θ_M values for fast retrieval, where θ_M is a radian angle that corresponds to a most significant word (MSW) of the input angle θ. The fine stage rotation ~~is performed using~~ uses one or more error values that compensate for approximations and quantization errors associated with the coarse stage rotation. ~~By partitioning the rotation into coarse and fine rotation stages, a two-stage structure is obtained that requires much less hardware than a single-stage rotator, without sacrificing angle precision. This can occur because the two-stage rotator stores pre-computed cosine θ_M and the sine θ_M values in a small lookup table (e.g. memory device) for fast retrieval. Furthermore, the angle~~ The rotator consolidates ~~all~~ operations into a small number of reduced-size multipliers, enabling ~~the use of~~ efficient multiplier implementations[,] such as Booth encoding, ~~thereby~~ yielding a smaller and faster overall circuit. ~~When higher precision is desired, more accurate results can be attained simply by increasing the wordlength and the multiplier size, without significantly increasing overall circuit latency.~~

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